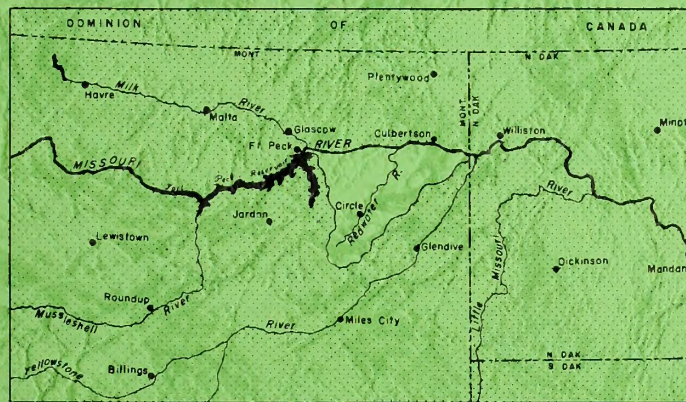


PRELIMINARY

PLANNING AND CLASSIFICATION REPORT
AS RELATED TO THE PUBLIC DOMAIN LANDS
IN THE

MONTANA PUMPING DIVISION



MONTANA

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A MISSOURI RIVER BASIN INVESTIGATION

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

REGION III
BILLINGS, MONTANA

DECEMBER 1951

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
(MISSOURI RIVER BASIN INVESTIGATIONS)

PRELIMINARY REPORT
ON
LAND PLANNING AND CLASSIFICATION
OF THE
PUBLIC DOMAIN LANDS
AS RELATES TO THE
MONTANA PUMPING DIVISION AREA
OF THE PROGRAM OF
THE BUREAU OF RECLAMATION

REGION III
BILLINGS, MONTANA
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This report was compiled as a feature of the program of the Department of the Interior for the development of the resources of the Missouri River Basin.

PRESENT STATUS OF BUREAU OF LAND MANAGEMENT
STUDIES IN THE MISSOURI RIVER BASIN
(LAND CLASSIFICATION)



PREFACE

In the preparation of this report, information was gathered from several governmental agencies. Published reports, bulletins, and records were consulted. Assembly and analysis of pertinent information and the preparation of the report was by Edward D. Cox, Range Conservationist. The report was reviewed by the Area Manager, and his suggestions carefully considered. The study is being carried on as a feature of the Department of Interior's program for the development of the resources of the Missouri Basin, and the work was under the supervision of the Division of Land Planning, Region III of the Bureau of Land Management. The study in all its aspects was under the direction of R.D. Nielson, Regional Chief, Division of Land Planning.

This report presents a preliminary analysis of the physical and economic features of the Montana Pumping Division area. It is intended to serve as a guide in carrying out detailed studies of problems pertaining to the use and management of the remaining 160,000 acres of unappropriated, unreserved public domain lands in this area in furtherance of the total Missouri River Basin Development Program.

In carrying on the preliminary investigation and in presenting the information in this report, our primary concern and interest has been to develop factual data relating to the utilization, management, and development of the public domain lands and the resources thereon, particularly as these relate to the reclamation development in the area to which the study area is tributary. Some study of the over-all land use economy was necessary to ascertain the interrelationships

between the public land and other resources. In this connection, a general analysis of all land management programs operating in this area was made. The purpose of this study is to ascertain the basic facts pertinent to the formation of a sound program for the management, use, or disposition of the public domain lands which remain in this area.

This preliminary report is published to describe the area and its general problems as relate to the public lands and to "set the stage" for the detailed study of the public land which will set forth specific recommendations for the solution of the problems and for the development and highest use of the public domain.

PHYSICAL FEATURES

Location and Size

The Montana Pumping Division includes 2,286,626 acres or almost 3,600 square miles in northeastern Montana. The northern limit of the area extends along the Missouri River from Fort Peck Dam to the North Dakota, Montana state line. The area includes all of the drainage tributary to the river to the south of this line. (See map in appendix) The boundary of the southeast side is the divide between the Missouri and Yellowstone River drainages. The western boundary is the Big Dry Creek divide. Nearly all of McCone County, northern Prairie County, northwestern Dawson County, and the northwest half of Richland County are within the area as shown on the map accompanying this report.

Topography and Physiography

The topography of the area includes gently rolling or undulating farm and grazing lands, hilly grazing lands, and rough river breaks and badlands flanking the principal drainages. There are areas of flat alluvial flood plains or terraces along the Missouri River on which irrigation projects are being planned by the Bureau of Reclamation. Elevations range from about 1,870 feet where the Missouri River crosses the Montana-North Dakota border to approximately 3,400 feet on the divide south of Brockway, McCone County. Perhaps the most pronounced physiographic feature is the string of intermittent breaks and badlands flanking the south side of the Missouri River for the entire length of the project area.

The principal drainage into the Missouri River is Redwater Creek

with its tributaries. This creek has a good perennial flow in all except the very driest years. Other drainages include Lost, Hungry, Prairie Elk, Sand, Nickwall, Charlie, Two Mile, Hardscrabble, Day, and Otis Creeks.

Climate

The climate of the area is continental, characterized by low and relatively erratic rainfall, cold and windy winters and warm summers. The average annual precipitation for weather stations within and adjacent to the area ranges from a little over 13 inches at three stations just north of the river to 15.8 inches at Circle, McCone County. The average annual precipitation at Vida is 15-1/2 inches. Most of the precipitation falls as rain from May through September during the growing season. The average frost-free period ranges from 116 days at Circle to 135 days at Vida, McCone County. This is unusual, as the two towns are but thirty miles apart with little difference in topography or elevation.

The maximum temperature recorded in the area is 112° Fahrenheit and the minimum is -57°, both at Circle. Stations just north of the Missouri River report readings as low as -63°. Average January temperature at Circle is 14° Fahrenheit; July average temperature is 69°; and the annual average is 42.5°. Averages for Vida are slightly higher. The climatic and edaphic factors of the area favor production of small grains, hay, and native forage plants, principally short grasses. Heavy snows, blizzards, and prolonged cold spells make it necessary to

provide shelter and supplementary livestock feed during winter periods.

Geology and Soils

The land in the area was eroded nearly to its present form before the glacial epoch, the most significant surface disfiguration being wrought by the change in course of the Missouri River. Its preglacial course followed the present channel along the northwestern part of the project area to a point near Poplar in Roosevelt County, where it followed a channel northeast through Medicine Lake and southeastern Sheridan County and on into North Dakota. The southernmost extremity of the ice sheets extended into this area during the Illinoian or Iowan glaciation, forcing the Missouri River along the ice front and diverting it across what is now northern McCone County and Richland County. Here it crossed the divide into the Yellowstone River drainage, causing it to flow eastward. The river retreated northward with the toe of the ice sheet and finally settled in its present channel. Deposits of glacial till and a few low moranic hills and ridges are scattered over the northern part of the area. Foreign rock and boulders are found over much of the area, probably having been rafted by icebergs beyond the limit of the ice sheet.

The principal exposed geologic structure of the area is the Fort Union formation, of tertiary age, composed of two members: the Tongue River member and the Lebo shale member. The rolling sod-covered surface of the Tongue River member covers the greater part of the area, contrasting to the breaks and badlands of the underlying Lebo shale

member. Also found in the rough sections and badlands is the Lance formation with the Tullock and Hell Creek members. Bearpaw shales also contribute to the badlands and breaks. The Fox Hills sandstone layer follows along the breaks of the river and an alluvium of low terrace gravels are found along most of the stream valleys.

Minerals

Several thick extensive beds of lignite coal are contained in the Tongue River members, from which a supply of fuel is obtained for local use. Lignite is found in most of the area. There is some sub-bituminous coal in the southwest portion. Some coal outcrops have burned, fusing and baking the overlying rock to slag and clinker or scoria.

The Shell Oil Company in July, 1951 completed an oil well, NP1, near Richey. The location is the SENWNW Section 19, Township 23 N., Range 50 E. Oil, apparently capable of 200 barrels daily production, was found at the base of the Charles limestone, in the Madison formation. The well is being extended as a test to the Cambrian or 11,000 feet depth. This discovery probably assures the development of at least one oil field in the area. It has stimulated active oil and gas exploration in the vicinity and within the entire Williston Basin.

Soils

Much of the farming and farming-grazing lands of the area are covered by the moderately productive Joplin soils which supported much grain production up to the time of the 1933 drought and again

during recent years. Livestock raising in connection with farming is recognized as being a more stable operation than an exclusive wheat enterprise. The uncultivated areas of the Joplin soils support a fair grass cover. In dry years, the grass cover is short and of slow growth. The shallow immature Bainville soils occupy the rougher areas where erosional processes have precluded or retarded soil formation. The greater part of the area covered by these soils is too rough for cultivation, supporting variable cover of blue grama and threadleaf sedge, being chiefly valuable only for grazing and water shed.

Natural Vegetative Cover

The rolling grass covered prairies of the area are destitute of native trees and large shrubs, except along protected drainage courses, such as those found in the badland breaks. Along these streams are found greenash, boxelder, and eastern poplar or cottonwood. All trees in the area are scrub trees of no commercial value. Along the streams and in the draws, there are thickets of such shrubs as buffaloberry, chokecherry, snowberry, serviceberry, willows, and rose. Creeping juniper occurs throughout the area. More prominent shrub-like plants on the plains uplands are the big and silver sagebrush, wild alfalfa, snakeweed, rabbitbrush, soapweed, and plains prickly pear. The rolling plains are grasslands, the principal vegetation consisting chiefly of bluestem wheatgrass, slender wheatgrass, blue grama, threadleaf sedge, needle-and-thread

grass, prairie sandreedgrass, stonyhills muhly, and little bluestem.

ECONOMIC AND SOCIAL FACTORS

Area Economy

Up to the present time, the economy of the area is based principally upon small grain crop and livestock production. The topography and general character of most of the land is suitable only to livestock grazing or grazing combined with farming. In the case of the combined operations, the agricultural practices are usually limited to dry farm production of small grains and hay to be used as supplemental winter feed for livestock. Dry farming is practiced extensively on the plateaus which cap the river breaks and occur throughout the uplands of the area, spring wheat being the principal crop. Installation of several irrigation projects being planned by the Bureau of Reclamation on the alluvial flood plains and terraces along the river will serve to bolster and stabilize the localeconomy. Irrigation will provide for the production of supplementary feed during droughts.

Population

According to the 1950 census, the population of the area is approximately 5,000, averaging less than two persons per square mile. The largest town is Circle, with a population of 1,000; followed by Richey, with about 500; and Brockway, with about 100. There are several smaller communities scattered over the area. Large cities and towns nearby include Sidney, Wolfpoint, and Glendive, Montana, and

Williston, North Dakota.

Public Facilities

A branch line of the Northern Pacific Railroad, which runs from Glendive through Circle to Brockway, services the southwest portion of the area. The east-central portion is served by a branch line of the Great Northern Railway, extending from Sidney to Richey. The Great Northern also runs across the extreme eastern tip of the project area, crossing the Missouri River near Nohly, Richland County. The northern and western parts of the area have no direct railroad connections. Traffic must cross the river either on the bridges or ferries, where connections can be made with the main line of the Great Northern which parallels U.S. Highway No. 2, along the north bank of the river. Railroads serving the area are important, as they provide access to market for wheat and other grains, and permit shipment of supplementary feeds.

Two ferries operate intermittently across the Missouri River: one at Oswego, in the western part of the area; and one at Poplar, in the central part. There are four bridges across the river: one crossing the Fort Peck Reservoir spillway at the extreme western tip of the area; one near Wolf Point, carrying Montana State Highway No. 13, running from Circle to Wolf Point and on north; one on Montana State Highway No. 16, which runs northward from Sidney and crosses near Culbertson; and the combination railway and highway bridge near Nohly, in the extreme eastern tip of the project area. In

addition, Montana State Highway No. 18 parallels the Northern Pacific Railway from Glendive through Circle and Brockway, and continues on west. Many miles of connecting graveled and graded county roads serve the area.

LAND OWNERSHIP AND MANAGEMENT PROGRAMS

Management Program for Lands Administered by the Bureau of Land Management

The lands administered by the Bureau of Land Management comprise about seven per cent of the entire study area, or 164,224 acres. Of this, 238 acres are embraced by public water reserves, and 3,868 acres are included within the boundaries of the Fort Peck Game Range.

Most of the public domain lands lie in fairly concentrated blocks in the river breaks and badlands. They are lands of the lowest productivity with respect to surficial resources, consequently rating among the highest in land management problems. Their value is limited to the grazing of livestock, wildlife, and watershed. The rest of the public domain lands are widely scattered through the area as small isolated tracts having the common characteristic of limited usefulness and value because of physical and climatic limitations, and being chiefly valuable for grazing.

The 125,883 acres of Bureau of Land Management administered lands lying in Dawson, McCone, and Prairie Counties, are within the boundaries of Montana Grazing District No. 2, and are administered under the Taylor Grazing Act of June 28, 1934. Of this, 238 acres are embraced by

public water reserves. Some of these reserves no longer serve the purpose for which they were intended, consequently there is need for a classification to determine the highest use to which the lands can be placed. Their proper use and integration with the existing and proposed land management program should also be determined. There are 3,868 acres of public lands included within the boundaries of the Fort Peck Game Range, which are administered jointly by the Bureau of Land Management and the Fish and Wildlife Service through a Memorandum of Understanding, dated July 20, 1945, for the "protection and production of big game animals, other secondary wildlife, and for such domestic livestock for which supplies of forage and water are normally produced or made available ... on the Game Range," as stipulated under the conditions of the agreement. The 38,341 acres of public domain in Richland County are outside the boundaries of a Grazing District, and grazing resources are administered under Section 15 of the Taylor Grazing Act in connection with Montana Grazing District No. 2 with headquarters at Miles City. The over-all picture of land ownership in this study area is indicated in table 1. The geographic location and relationship of the several land management programs are shown on the accompanying map.

The Taylor Grazing Act of June 28, 1934, with its subsequent amendments, was enacted to "stop injury to the public grazing lands by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement, and development, to stabilize the

Table 1. - Land Ownership by Counties within the Montana Pumping Area, 1950, Acres 1/

Land Class	Inside Montana Grazing District No. 2			Outside Grazing District Richland	Total
	Dawson	McCone	Prairie 2/		
Lands administered by the Bureau of Land Management:					
Public Domain:					
Public Water Reserve: <u>4/</u>	3,984	117,386	407	38,341 <u>3/</u>	160,118
Fort Peck Game Range: <u>5/</u>		238			238
Total Bureau of Land Management:	<u>3,984</u>	<u>121,492</u>	<u>407</u>	<u>38,341</u>	<u>3,868</u> <u>164,224</u>
Lands administered by the Bureau of Indian Affairs:					
Indian Allotments: <u>6/</u>		7,279		881	8,160
Lands administered by the Soil Conservation Service:					
Title III purchase, Land Utilization Area: <u>7/</u>			20,991		20,991
Lands administered by the Bureau of Reclamation					
				1,229	1,229
Lands administered by the State of Montana:					
School Lands:	14,920	64,189	3,307	41,080	123,496
Water Area:		1,393		75	1,468
Total State of Montana:	<u>14,920</u>	<u>65,582</u>	<u>3,307</u>	<u>41,155</u>	<u>124,964</u>
Private Lands:	284,116	1,064,492	54,606	563,844	1,967,058
Total, all classes:	<u>303,020</u>	<u>1,258,845</u>	<u>79,311</u>	<u>645,450</u>	<u>2,286,626</u>

1/ Compiled from official records of the Bureau of Land Management, Region III, Billings, Montana.

2/ All Prairie County is included within Prairie Co-operative State Grazing District and the Soil Conservation Service Land Utilization Project LU-MT-4.

3/ Administered by Montana Grazing District No. 2 under Section 15 of the Taylor Grazing Act of June 28, 1934.

4/ Reservations of public lands which contain springs or water holes for the purpose of keeping the water available for public use.

5/ Administered jointly by the Bureau of Land Management and the Fish and Wildlife Service.

6/ Trust patented to individual Indians and under custodial administration of the Bureau of Indian Affairs.

7/ Taken from "Soil Conservation Districts," Soil Conservation Service annual report for 1949.

livestock industry dependent upon the public range, and for other purposes." In order to promote the highest use of the public domain lands pending their final disposition, the Secretary of the Interior was authorized to establish grazing districts embracing vacant, unappropriated, and unreserved public domain land. Permits or licenses for grazing privileges in such established districts are granted to qualified applicants engaged in the livestock business and who own or control sufficient base property that will provide for a year-round operation. Class and numbers of stock, and seasons or periods of use, are specified in the permit. The permits or licenses are usually for a term of ten years, but can be amended, or even cancelled, under certain conditions. Grazing use of the public domain within grazing districts is integrated with the use of the base properties or the privately owned or controlled lands of the operator, so that, together, the public and privately controlled lands, and other lands, such as other publicly acquired lands, form a year-long operation for the class and number of livestock that the unit will support without damage to the land or its resources. Thus, the loss of any material part of either the privately controlled base property or the public range may cause a serious disturbance to an established operation.

The Taylor Act also provides for the administration of public lands so situated as not to justify their inclusion in any grazing district. The grazing of lands outside a district is authorized under a leasing system, whereby the stockmen owning or controlling adjacent

lands have a preference right in such leases. Leases are usually granted for a period of ten years. The leased public domain is used in conjunction with the privately owned or controlled lands in supplying feed for a stipulated number of livestock for a definite period of the year. These same public lands may have significant mineral and other subsurface values which are not reported here.

Management program for Lands Administered by the Bureau of Indian Affairs

There are 8,160 acres of land in this project area in Indian Allotments. These allotments may be described as an allocation of a parcel of public lands to an Indian for his individual use because of a tribal treaty or for some other reason. They are trust patented to an individual Indian and are under the custodial administration of the Bureau of Indian Affairs. They are allotted to the Turtle Mountain Indians, formerly of the Chippewa Tribe. At the present time, they are being handled through the Fort Peck Agency at Poplar under a policy of disposing of them as soon as possible, primarily through sale into private ownership. When not used by the Indians themselves, these lands are being leased out for grazing on a yearly basis at 25 cents per acre per year. They are assigned a flat over-all carrying capacity of 25 acres per animal unit per year.

Management Program for Lands Administered by the Fish and Wildlife Service

As described previously, under the Bureau of Land Management administrative program, the Fish and Wildlife Service administers jointly with the Bureau of Land Management, through a Memorandum of Understand-

ing, 3,868 acres within the project area, which was formerly public domain but was withdrawn in 1936 for the Fort Peck Game Range. This game range was established for the "protection and production of big game animals, other secondary wildlife, and for such domestic livestock for which supplies of forage and water are normally produced or made available ... on the Game Range," as stipulated under the conditions of the agreement. The joint administration pertains only to the forage resources. Minerals, timber, and other resources indigenous to the lands are administered by the Bureau of Land Management.

Management Program for Lands Administered by the Soil Conservation Service

A relatively new part of the public land picture in this project area arises from land purchases by the Federal Government. Under Title III of the Bankhead-Jones Farm Tenant Act of July 22, 1937, the Secretary of Agriculture is authorized and directed "to develop a program of land conservation and land utilization, including the retirement of lands which are submarginal or not primarily suitable for cultivation, in order thereby to correct maladjustments in land use, and thus assist in controlling soil erosion, increasing reforestation, and preserving natural resources, and mitigating flood damage." To effectuate the program he was authorized to acquire by purchase, gift, or devise, or by transfer from any agency of the United States, submarginal land and land not primarily suitable for cultivation, and to protect, improve, develop, and administer any property so acquired. The object of such purchases has been to balance the land resource with the population

dependent upon it for support. The policy has been to shift land use practices from precarious and frequently disastrous cash grain farming to a combination of forage-cropland-range livestock production. The Act prohibits the sale of any such acquired lands into private ownership, but an amendment does permit land exchange on an equal value basis. Consideration has been given by the Bureau of Land Management to the close relationship of the public domain with these acquired lands and how their related uses, management, development, and improvement can best be achieved in the interests of individual, community, and national welfare.

There are 361,763 acres of these repurchased lands throughout Prairie County; 20,991 acres, or about six per cent, of which are within the area of influence of the Montana Pumping Division. These purchased lands are under the jurisdiction of the Soil Conservation Service, being in Land Utilization Project LU-MT-4. The lands are leased to and managed by the Prairie Co-operative State Grazing District.

In addition to the more or less combined Land Utilization area and State Grazing District, there are parts of three Soil Conservation Districts contained within the Montana Pumping Division area. These districts have been organized pursuant to the Soil Conservation Districts Law of the State of Montana as governmental subdivisions of the state. They are authorized to cooperate with and obtain assistance from any private, state, or Federal agency in carrying out

soil and moisture conservation operations and in effecting wise land use on all private, state, and Federal lands within their boundaries, upon obtaining consent of the landowners or agencies having jurisdiction thereof. The names of the organized districts, their area, the approximate number of farms in each, their location within the area, and the approximate percentage of each district embraced by the area, are as follows:

Table 2. - State Soil Conservation Districts in the Area

Name of Conservation District	Area (Acres)	No. of Farms	County	Per cent Embraced In Project Area
Mona-Andes	1,321,600	1,099	Richland	49
McCone	1,688,320	683	McCone	75
Dawson	1,509,120	792	Dawson	20

Prairie Co-operative State Grazing District

The non-profit Prairie Co-operative State Grazing District was established under authority of the "Grass Conservation Act," enacted by the legislative assembly of the State of Montana, on March 15, 1939, (Montana Laws Session, 1939). Section 1 of the Act states that its purpose is to "provide for the conservation, protection, restoration, and proper utilization of grass, forage, and range resources of the State of Montana; to provide for the incorporation of co-operative non-profit grazing districts; to provide a means of co-operation with the Secretary of the Interior, as provided in the Federal Act known as the Taylor Grazing Act, and any other governmental agency or depart-

ment having jurisdiction over lands belonging to the United States or other state or Federal agency, as well as agencies having jurisdiction over Federal lands, to permit the setting-up of a form of grazing administration which will aid in the unification or control of all grazing lands within the State where the ownership is diverse and the lands intermingled, and to provide for the stabilization of the livestock industry, and the protection of dependent commensurate ranch properties as defined. This Act provides for a State Grass Conservation Commission to assist in carrying out the purposes of this Act, to act in an advisory capacity with the State Land Board and County Commissioners, and to supervise and coordinate the formation and operation of districts which may be incorporated under this Act."

For the purpose of bringing about a better coordination of the use of all classes of land used for grazing within the state grazing district boundary, cooperative agreements are drawn up with each of the state or Federal agencies concerned, whereby permits, licenses, or leases are issued to the district for each class of land involved. These contracts are subject to the various laws and regulations under which each of the cooperating agencies derive their authority. They are allocated and managed collectively by the officials of the district who are chosen democratically from the membership of the cooperative. These officers are responsible for collecting all the grazing fees from the members and paying the fees due under the terms of the agreements with the several cooperating agencies. They are also responsible

for the compliance of the members with the various laws and regulations pertaining to the State District.

Land Administration and Irrigation Projects Proposed by Bureau of Reclamation

Irrigated land in the area amounts to 1,229 acres which are adjacent to the North Dakota border in the eastern tip of the project area. This land was developed and put under irrigation by the Bureau of Reclamation in 1906. It was developed as a part of the Lower Yellowstone Irrigation Project, which contained a total of more than 58,000 acres. This was a pioneer project in the field of reclamation development, and was the sole development in the general area until 1937, when additional projects were developed further upstream along the Yellowstone River.

Irrigation development for the Montana Pumping Division and the Missouri Diversion Unit is in the planning stage, the areas and other features being indefinite. Present proposals for the Montana Pumping Division include fourteen pumping units along the south side of the Missouri River from near Fort Peck Dam to near the North Dakota state line. The units have a total irrigable area of about 30,000 acres.

A recent plan of the Bureau of Reclamation proposes irrigation for three of the units by means of a gravity canal. The three units to be served by the canal are the N-Bar-N, the Wapiti, and the Fort Charles. The canal will start at the Missouri Diversion Dam, which has been relocated twelve miles downstream from the site originally proposed. The dam has been redesigned to a thirty-foot height in

order to secure a power drop. Capacity of the power installation will be 18,000 kilowatts. The dam is proposed for irrigation and other developments on the north side and irrigation on the south side of the river. It is a portion of the Missouri Diversion Unit and could divert water for the Missouri-Souris Division, if and when the latter division is built.

Land Administered by the State of Montana

There are 124,964 acres of state-owned lands embraced by the study area, being approximately six per cent. Part of this land lies in small irregular subdivisions in Richland County. It was obtained by the state through lieu selections to replace school lands not secured in other areas.

As a result of this superficial study, it appears that it might be to the advantage of the Bureau of Land Management and the state to consummate a program of exchange of some tracts of land to consolidate and simplify management.

Private Lands

A total of 1,967,058 acres, or about 86 per cent, of the project area is privately owned. About one-sixth of the private land is farmed.

PROBLEMS AS RELATE TO PUBLIC DOMAIN LANDS

A reconnaissance survey and cursory analysis of published reports and public records pertaining to the Montana Pumping Division area have revealed many problems relating to the management, protection,

development, and utilization of the public domain lands and their resources under the comprehensive program for the development and utilization of the resources in the Missouri River Basin. These studies have not been of sufficient detail to determine their scope and seriousness, nor to prescribe detailed corrective measures. Further investigations will be necessary. Additional problems to those listed below will no doubt be discovered in the more detailed studies. The purpose of this preliminary survey and report is to determine and describe in general terms the role of the public lands in the development program, and to point to the principal problems confronting the Bureau of Land Management in providing for the maximum contribution and service of this public land to the comprehensive program.

The map in the appendix shows the scattered location and extent of the public domain land and the boundaries of the various Federal land management programs in operation in the project area. Federal land disposition and acquisition programs have both been operative within the past fifteen years. A lack of sound policy as to Federal land programs is complicating long-range planning for this, as well as other, areas in the Missouri Basin. Superficial analysis of the land capabilities and land use economics indicates that much of the public domain, principally the isolated and widely scattered tracts, could be most effectively managed and utilized under private ownership. Further detailed study of each tract of public domain land and a comprehensive analysis of the entire land use economy of the

area is necessary to develop a sound policy and an approach to more effective land administration and resource development. The many and varied uses of land and its relationship to public interests and public problems must be fully considered.

In the event that the base properties of an existing livestock operator should be included in a reclamation development program, it is possible that the existing attached range privileges might be apportioned among other operators, including operators of new farm units. The relatively small amount of public domain land remaining in the area where development is proposed, however, will ordinarily preclude such a possibility. Since public ranges are fully stocked, new farm units to be established as a result of an expanded irrigation project would have little opportunity to obtain the use of adjacent or nearby public domain range lands to supplement feed produced on these units. Any material expansion of livestock operations on these units and beyond the capacity of these units, will generally be through purchase or development of private properties.

The general economy of the range areas, where most of the public domain lands are located, will undoubtedly be improved through additional irrigation development even if some disturbance will result to some individual livestock operators through the loss of base properties. An expanded irrigation program will furnish not only additional cultivated feeds needed in livestock production in the area, but will also furnish additional pastures, roughage, and concentrates

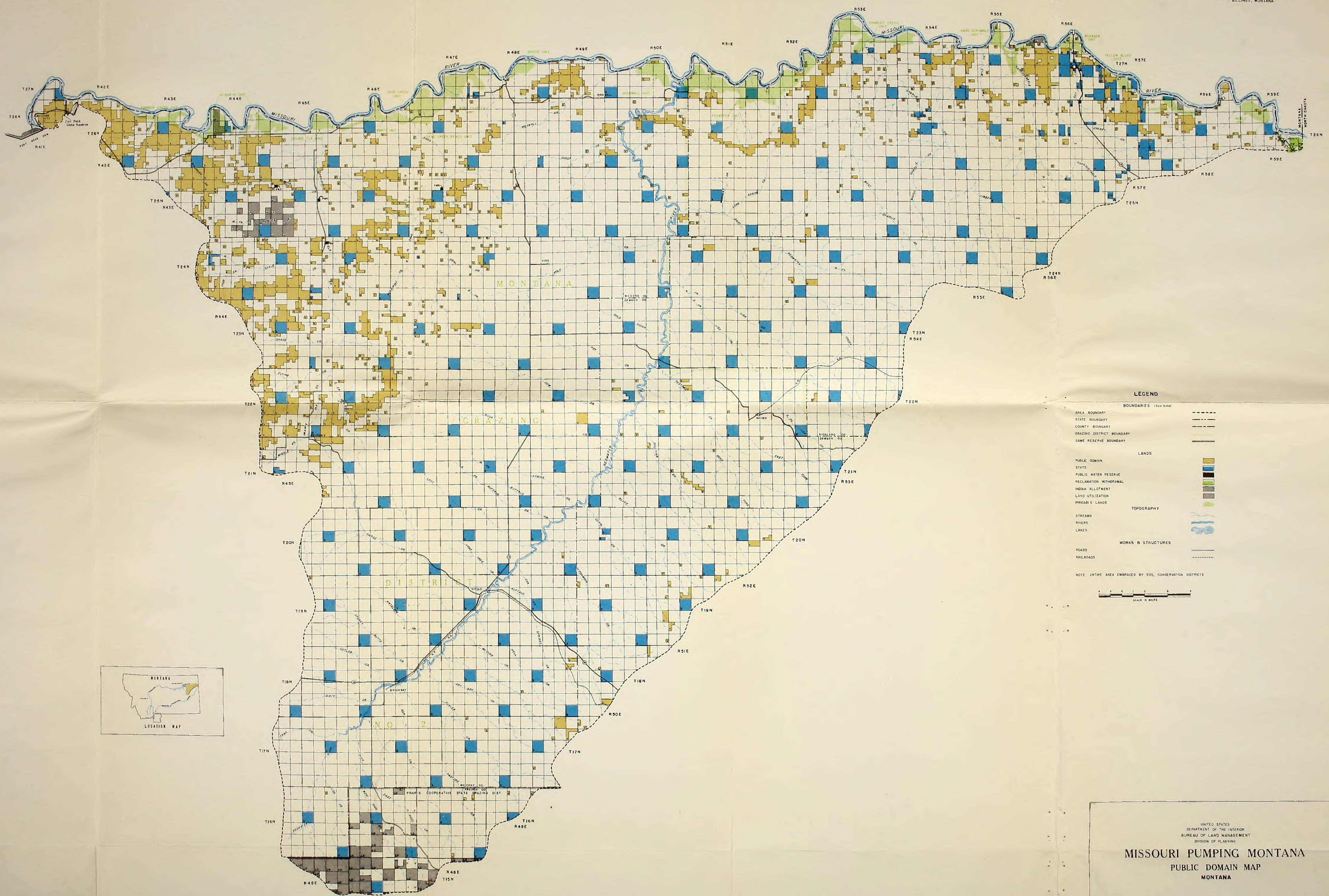
for the feeding and fattening of livestock for market. The additional feed produced can easily find a local outlet, thereby increasing feeding operations and adding to the wealth of the area. Further detailed studies are necessary, however, to determine the relationship between the irrigated farm units and the grazing use of the adjacent public domain lands.

Normal erosion, taking place on the extensive areas of heavy clay soils in the badlands, is generally a more serious problem than the accelerated form on farmlands. Not only is erosion quite active, but the problem of siltation is also serious. Those areas are susceptible to high run-off and rapid erosion because of their thin vegetative cover, slope, and soil character. Because of this erosion danger, considerable care must be exercised in grazing use of the area.

Wildlife, including deer and antelope, fur bearers, and game birds are a resource of the area which should be considered in connection with a land use and conservation program. It is recognized that there is some demand from the local public for an increased big game population in the area. It is also recognized that the range livestock and ranching business is one of the principal industries, and one which depends upon the public and private range lands for its existence. These conflicting uses must be reconciled and kept in balance with available feed resources, and in keeping with proper land use practices, all of which is contingent upon the full cooperation of both public and private land-holding interests.

Land classification studies are necessary to obtain the basic data necessary to the solution of these and other problems not mentioned. A remedial program should be preceded by a detailed inventory and classification of the resources of the public domain lands, their capabilities, suitability, and condition. A comprehensive analysis of the total land use economy of the area should be made in cooperation with other land managing agencies and interests. Such detailed studies should include a qualitative and quantitative appraisal of the many multiple land use relationships, with emphasis on their watershed significance. With the development of land impoundments on the main tributaries and main stem of the Missouri River, the proper management and protection of the upper watershed area assumes greater importance.

The subsequent detailed report on the public domain lands for this area will complement this report and should also be used in developing specific programs for land management and resource development.



LEGEND

- BOUNDARIES (See Note)
- AREA BOUNDARY
 - STATE BOUNDARY
 - COUNTY BOUNDARY
 - GRAZING DISTRICT BOUNDARY
 - GAME RESERVE BOUNDARY
- LANDS
- PUBLIC DOMAIN
 - STATE
 - PUBLIC WATER RESERVE
 - RECLAMATION WITHDRAWAL
 - INDIAN ALLOTMENT
 - LAND UTILIZATION
 - IRRIGABLE LANDS
- TOPOGRAPHY
- STREAMS
 - RIVERS
 - LAKES
- WORKS & STRUCTURES
- ROADS
 - RAILROADS

NOTE: ENTIRE AREA EMBRACED BY SOIL CONSERVATION DISTRICTS

SCALE IN MILES

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DIVISION OF PLANNING

MISSOURI PUMPING MONTANA
PUBLIC DOMAIN MAP
MONTANA

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